PORSZASZ, J.; BARANKAY, T.; SZOLCSANYI, J.; GIBISZER-PORSZASZ, Katalin;
MADARSZ, Klara

Studies of the neural connexion between the vasodilatator and vasoconstrictor centres in the cat. Acta physiol. acad. sci. hung. 22 no.1:29-41 '62.

1. Institute of Physiology, Medical University, Szeged.
(VASOMOTOR SYSTEM)

MALAS, A.

MALAS, A. Structure and development of wood consumption. in Europe. p. 1[illegible].

Vol. 6, No. 1, Jan. 1956.
FAIPAR.
TECHNOLOGY
Budapest, Hungary

So: East European Accession, Vol. 5, No. 5, May 1956

MADAS, A.

The problems of producing wood fiberboard and chip board in the light of the Geneva Conference.

p. 106 (Faipar) Vol. 7, no. 3, Aug. 1957, Budapest, Hungary

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

MADAS, A.

TECHNOLOGY

FAIPAR. (Fairpari Tudomanyos Egyesulet) Budapest.

World situation concerning wood and the 15-year development plan of the wood industry. p. 285.

Vol. 8, no. 10. Oct. 1958

Remarks made at the Sopron National Conference arranged by the Scientific Association of the Wood Industry. p. 296.

Monthly List of East European Accessions (EEAI). LC. Vol. 8, No. 3,
March, 1959, Unclass.

MADAS, A.

"Some economic problems of Hungarian forestry." p. 138.

AZ ERDO. (Orszagos Erdeszeti Egyesulet). Budapest, Hungary, Vol. 11,
No. 6, June 1959.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 8,
August 1959.
Uncla.

MADAS, A.

30(1), 30(5)

AUTHOR: Vasil'yev, P. V., Professor SOV/30-59-1-49/57

TITLE: Economy of Socialist Forestry (Ekonomika sotsialisticheskogo lesnogo khozyaystva)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 139-141 (USSR)

ABSTRACT: The conference dealing with this subject took place in Moscow from 6-9 October, 1958. The conference had been convened by the Institut lesa Akademii nauk SSSR (Forest Institute of the Academy of Sciences, USSR); scientists and experts in forestry of the USSR, as well as scientists from the People's Republic of China and the countries of the People's Democracies (totalling over 130 persons) participated. The main task of the conference was working out suggestions concerning the increase of production in forestry of the USSR in connection with the 7-year plan and the period from 1965-1975. The following reports dealing with the problems mentioned were presented: V. P. Tseplyayev, Glavnoye upravleniye lesnogo khozyaystva Ministerstva sel'skogo khozyaystva SSSR (Chief Administration of Forestry of the Ministry for Agriculture of the USSR) spoke about the main aims and prospects in the development of forestry.

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P. V. Vasil'yev, (Forest Institute of the AS USSR) reported on the economic problems in the present development of Socialist forestry and the tasks of forestry economics

A. G. Soldatov, Institut ekonomiki sel'skogo khozyaystva Akademii nauk USSR (Institute for Economy of Agriculture of the AS UkrSSR) spoke about measures to increase production of the Ukrainian forests.

Wu Chang-Lung (People's Republic of China) delivered a report on the outstanding success in forestry in his country.

E. Kalzer (German Democratic Republic) dealt with economic bases and the organization of long-term planning in forestry.

A. Madas (Hungary) spoke about the importance of a proper price policy for lumber.

S. Nedyalkov (Bulgaria) reported on the wide experience of Bulgarian forest experts concerning the rise of production in forests.

M. Schüme (German Democratic Republic), K. Wolagin (Poland) spoke about the development of forestry and its importance for planning and controlling economic work in the forests.

R. Fromar, T. Molenda, W. Katek (Poland) dealt with the achievements of Polish forestry economics.

Card 2/3.

9 5

MADAS, Andras

Problems of using waste materials in the principal lumbering as well as wood-using countries. Faipar 10 no.3:73-78 M '60.

MADAS, Andras

Afforestation of our most treeless county. Elet tud 15 no.5:143-147 31 Ja '60.

1. Orszagos Tervhivatal helyettes osztalyvezetoje.

MADAS, Andras, dr., a mezogazdasagi tudomanyok (erdeszet) kandidatusa

University of Forestry and Wood Industry. Erdo 11 no.10:433-434 O '62.

1. Orszagos Erdeszeti Egyesulet elnoke, es Orszagos Tervhivatal mezogazdasagi foosztalyanak vezetoje, Budapest.

MADAS, Andras, dr., a mezogazdasagi tudomanyok (erdeszet) kandidatusa

Presidential report delivered at the general meeting of the Hungarian Forestry Association. Erdo 12 no.8:342-346 Ag '63.

1. Orszagos Tervhivatal Mezogazdasagi Foosztalyanak vezetoje, Budapest; "Az Erdo" szerkeszto bizottsagi tagja.

MADAS, Andras, dr.; STELCZER, Karoly; OROSZLANY, Istvan, dr., tanszekvezeto docens; MATRAI, Istvan, fomernok; MANTUANO, Jozsef; KARASZI, Kalman; ZIEGLER, Karoly; BARNA, Aladar

Remarks about the lecture by Dr. Ede Kertai entitled "Water resources development in Hungary." Hidrologiai kozlony 43 no.2:95-98 Ap '63.

1. Orszagos Tervhivatal Mezogazdasagi Foosztalyanak vezetoje (for Madas). 2. Vizgazdalkodasi Tudomanyos Kutato Intezet igazgatoja (for Stelczer). 3. Godolloi Agrartudomanyi Egyetem; "Hidrologiai Kozlony" szerkeszto bizottsagi tagja (for Oroszlany). 4. Vizugyi Tervezo Vallalat (for Matrai). 5. Melyepitesi Tervezo Vallalat osztalyvezetoje (for Mantuano). 6. Kozepdunantuli Vizugyi Igazgatosag igazgatoja (for Karaszi). 7. "Hidrologiai Kozlony" szerkeszto bizottsagi tagja (for Ziegler).

GAL, Janos, dr.; MADAS, Andras, dr., mezogazdasagi tudomanyok (erdeszet) kandidatusa; SOMOGYI, Laszlo

Salute to the ten-year-old National Main Directorate of Forestry. Erdo 13 no.10:437-439 O '64.

1. Rector, University of Forestry and Timber Industry, Sopron (for Gal). 2. President, National Forestry Association (for Madas). 3. Secretary General, Scientific Association of the Wood Industry (for Somogyi).

SZILAGYI, Elemer,okl.mernok; V.NAGY, Imre,dr.; SZIVAK, Attila; FEKETE, Karoly; LACZAI **SZABO**, Tibor; CSERMAK Bela; DULANSZKY, Nandor; MORVAI, Vilmos, okl.mernok; BELLOSEVICH, Sandor; DENESI, Odon; MADAS,Jozsef; GOCZ, Bela; VARNAI, Tivadar; HETENYI, Endre

Industrial water supply. Pecsi musz szeml 6 no.4 **supplement:5-14** O-D '61.

1. Vizgazdalkodasi Tudomanyos Kutato Intezet igazgatohelyetese (for V.Nagy). 2. Melyepitesi Tervezo Vallalat (for Szivak). 3. Deldunantuli Vizugyi Igazgatosag (for Fekete). 4. Nehezipari Miniszterium Villamosenergiaipari Igazgatosag (for Laczai Szabo). 5. Vizgazdalkodasi Tudomanyos Kutato Intezet (for Csermak). 6. Pecsi Viz- es Csatornamuvek (for Dulanszky). 7. FTV V.Mernokgeologiai Osztaly (for Bellosevich). 8. Epitesugyi Miniszterium Pecsi Tervezo Vallalat Ybl-dijas varosrendezo epiteszmernoke (for Denesi). 9. Pecsi Szentroszt (for Madas). 10. Pecs mj.varos Tanacsa Vegrehajto Bizottsaga elnokhelyettese (for Gocz). 11. Pecs mj.varosi KOJALL (for Varnai). 12. Orszagos Vizugyi Foigazgatosag fomernoke (for Hetenyi)

MADAS, I.

A bogie for demonstration.

P. 75 (FIZIKAI SZEMLE) Budapest. Vol. 7, No. 2/3, Apr./June 1957.

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957.

MADAS, L.

Experiments with a universal phase indicator. p. 188
FIZIKAI SZEMLE (Eotvos Lorand Fizikai Tarsulat) Budapest
Vol. 5, no 6, Dec 1955

Source: EEAL LC Vol 5, No. 10 Oct. 1956

MADAS, Laszlo

Demonstrative trams. Fiz szemle 7 no.2/3:75-77 Ap-Je '57.

1. Banki Donat Gepipari Technikum, Budapest.

MADAS, Laszlo

Compound motions and the Newton law of force. Fiz szemle 8 no.6:189-193 Je '58.

1. Banki Donat Gepipari Technikum.

MADAS, Laszlo

Physical pendulum. Fiz szemle 15 no.1:23-27 Ja '65.

1. Lajos Petrik Technical School of Chemical Industry, Budapest.

MADATOV, E.Kh.; KASUMOVA, G.K.

Mineral composition of clays of the Kala series. Azerb.neft.khoz. 35 no.8:4-5 Ag '56. (MLRA 9:10)

(Clay)

AZIZBEKOV, Sh.A.; MADATOV, E.Kh.

Petrochemical characteristics of plagioclase granite intrusions in the northeastern part of the Lesser Caucasus. Trudy Azerb. ind. inst. no.18:38-53 '57. (MIRA 11:7)
(Caucasus--Monzonites)

AZIZBEKOV, Sh.A.; MADATOV, E.Kh.

Petrochemical characteristics of granitoid intrusives from the postmiddle Jurassic - pre-Senoman in the Lesser Caucasus (Azerbaijan). Trudy Azerb. ind. inst. no.19:9-33 '57. (MIRA 11:9)
(Azerbaijan--Granite)

MADATOV, E.Kh.

Graphic presentation of the material composition of medium fine-grained rocks by the four component method. Azerb.neft. khoz. 37 no.10:9-11 O '58. (MIRA 12:2)
(Rocks, Sedimentary)

MADATOV, E.Kh.; KASUMOVA, G.M.; KERIMOVA, Z.A.

Mineralogical composition of clays in the Kala series. Azerb.neft.khoz.
37 no.12:10-11 D '58. (MIRA 12:3)
(Apsheron Peninsula--Clay)

KHEIROV, M.B.; MADATOV, E.Kh.

X-ray study of clays of the Akchagyl stage in the eastern part of the Kura Lowland. Azerb. neft. khoz. 38 no.6:4-7 Je '59. (MIRA 12:10)

(Kura Lowland--Clay) (X-rays--Industrial applications)

KHEIROV, M.B.; MADATOV, E.Kh.

Mineralogical composition of clays in the producing formation of the Sarydzhalyar and Kyurovdag areas in the Kura Lowland. Azerb. neft. khoz. 38 no.9:6-9 S '59. (MIRA 13:2)
(Kura Lowland--Clay)

MADATOV, E. Kh.

Template for recording petrographic data on a classification square. Trudy AzNII DN no.9:54-57 '60. (MIRA 14:5)
(Petrology—Equipment and supplies)

MADATOV, E.Kh.

Pyroclastic rocks in Eocene and lower Miocene sediments of the Kirovabad region in Azerbaijan. Trudy AzNII DN no.10:131-142 '60. (MIRA 14:4)

(Kirovabad region (Azerbaijan)—Volcanic ash, tuff, etc.)

KHEIROV, M.B.; MADATOV, E.Kh.

Results of an X-ray study of clays in the producing formation of the Kalamadyn and Alyaty spit areas of the Kura Lowland. Azerb. neft. khoz. 39 no.1:9-12 Ja '60. (MIRA 14:8)
(Kura Lowland--Clay) (X rays--Industrial applications)

MADATOV, E.Kh.; ABDULLAYEV, R.N., red.; SHTEYNGEL', A.S., red. izd-va; BAGIROVA, S., tekhn. red.

[Pyroclastic rocks]Piroklasticheskie gornye porody. Baku, Azerneshr, 1962. 247 p. (MIRA 15:9)
(Volcanic ash, tuff, etc.)

MADATOV, E.Kh.; RAKHMANOVA, S.K.

Petrographic characteristics of carbonate rocks in Upper Cretaceous sediments of the Kirovabad oil- and gas-bearing area (Dallyar-Tauz and Gyullyudzha sections). Azerb. neft. khoz. 42 no.1: 13-15 Ja '63. (MIRA 16:10)

(Azerbaijan--Rocks, Carbonate)

ZUL'FUGARLY, D.I.; MADATOV, M.N.

Occurrence of manganese and vanadium in some Azerbaijanian soils. Uch. zap.AGU no.3:75-81 '58. (MIRA 12:1)
(Azerbaijan--Soils--Analysis) (Manganese) (Vanadium)

ZUL'FUGARLY, D.I.; MADATOV, M.N.

Distribution of some trace elements in soils of Lachin and Dashkestan districts. Azerb. khim.zhur. no.3:113-121 '61.
(MIRA 14:11)

(Lashin District--Soils--Analysis)
(Dashkestan District--Soils--Analysis)

Q-2

USSR / Farm Animals.

Abs Jour : Ref Zhur - Biol., No 10, 1958, No 45204

Author : Madatov, M. R.
Inst ~~: Not given~~
Title : The Use of Artificial Insemination in Buffalo Breeding.

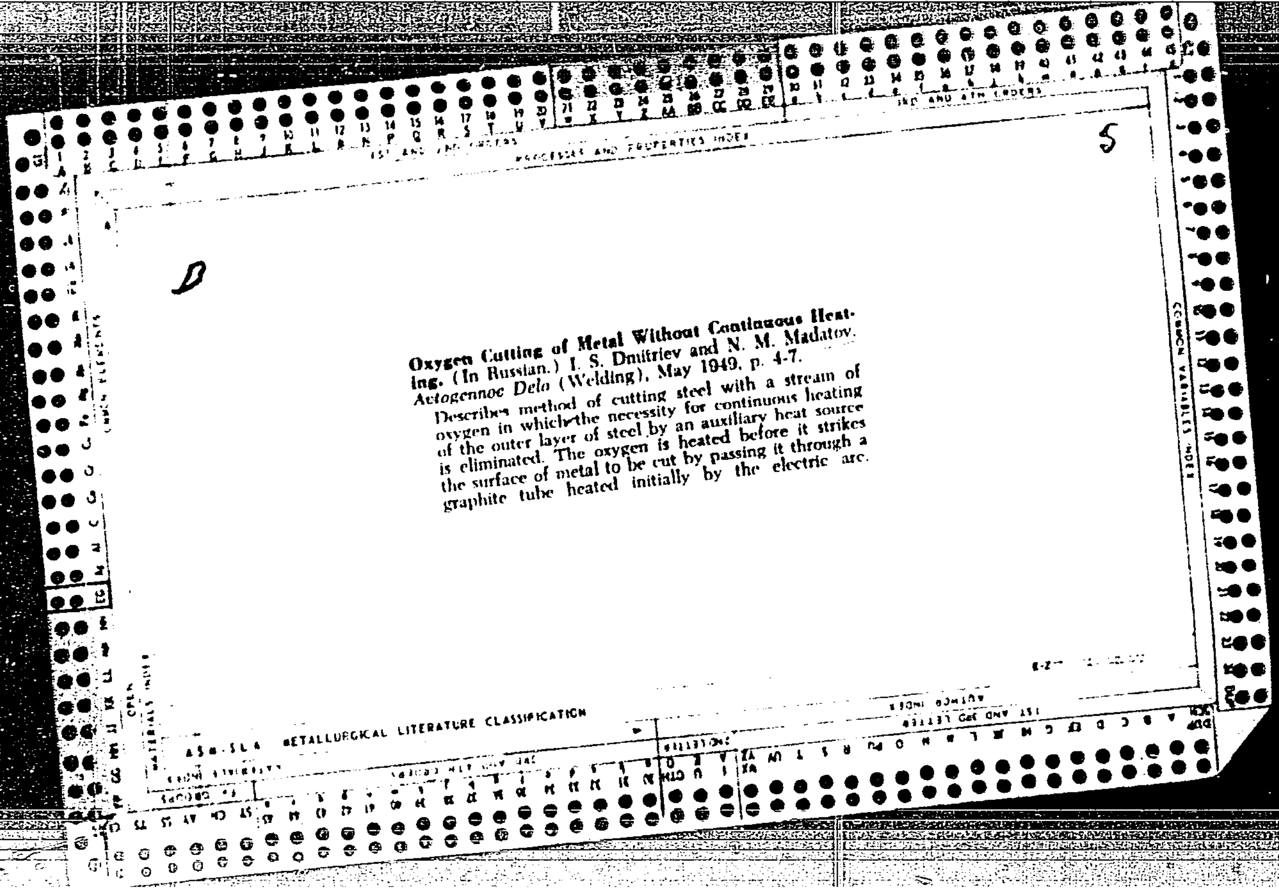
Orig Pub : Azerb. elmi-tedgigat, heyvandarlyg inst. eserleri, Tr. Azerb. n.-i. in-ta zhivotnovodstva, 1956, No. 1, 129-144.

Abstract

The experiments in the artificial insemination of buffaloes with the semen of buffalo sires, which were carried out in the Azerbaijan SSR from 1938 on, are described. The average volume of ejaculum was 3.66 ml., varying from 1.0 to 10.5 ml. The concentration of spermatozoa in the semen (per 1 ml.) averaged 0.98 billion, varying from 0.1 to 2.1. The resistance of semen was 5.5 thous., varying from 2.2 to 17 thous. In single sires, under good conditions of maintenance, the resistance of semen was close to 35 thous. The number of

Card 1/2

MADATOV, M. R., Cand Biol Sci -- (diss) "Sexual activity in buffalo and artificial insemination of buffalo." Kirovabad, 1959. 23 pp; (Ministry of Agriculture Azerbaydzhan SSR, Azerbaydzhan Agricultural Inst); 150 copies; price not given; (KL, 17-60, 147)


1ST AND 2ND ORDERS
PROCESSES AND PROPERTIES INDEX
3RD AND 4TH ORDERS
COMMON VARIABLES INDEX
OPEN
MATERIALS INDEX
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

5

D

Oxygen Cutting of Metal Without Continuous Heating. (In Russian.) I. S. Dmitriev and N. M. Madatov. *Avtogennoe Delo* (Welding), May 1949, p. 4-7.

Describes method of cutting steel with a stream of oxygen in which the necessity for continuous heating of the outer layer of steel by an auxiliary heat source is eliminated. The oxygen is heated before it strikes the surface of metal to be cut by passing it through a graphite tube heated initially by the electric arc.

MADATOV, N.M., inzh.

Cable selection in the design of welding systems on ships. Sudostroenie 26 no.10:33-39 O'60. (MIRA 13:10)
(Electricity on ships) (Electric welding)

S/135/61/000/002/010/012
A006/A001

AUTHORS: [redacted] Trepov, P. V., Engineers

TITLE: Electrode Holder for Submerged Oxygen-Arc Cutting of Steel With Spark Extinguishing Chamber

PERIODICAL: Svarochnoye proizvodstvo, 1961, No. 2, pp. 37-38

TEXT: Practice has shown that in submerged oxygen arc welding of steel, burning of the rubber packing and adjacents parts of the welding head occured in spite of an improved technology used (first oxygen supply - then arc ignition) This deficiency is due to the violation of the established operational sequence. As a result, at the moment of arc ignition the molten metal splashes into the electrode channel and reaches the rubber packing of the welding head. Experiments have shown that burning of the rubber packing can be reduced by employing an insulated metallic chamber collecting and extinguishing the sparks. As a result, the ЭКД-4-60 (EKD-4-60) electrode holder was designed (Figure 2), with a spark extinguishing chamber, without a reverse valve, and with smaller dimensions of the rubber packing mounted separately from the textolite head body. Results of comparison tests made with the new and the former EKD-4 electrode holder (Table)

✓

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S/135/61/000/002/010/012
A006/A001

Electrode Holder for Submerged Oxygen-Arc Cutting of Steel With Spark Extinguishing Chamber

showed that the durability of the EKD-4-60 holder was higher by a factor of 6. Only the rubber packing of the electrode tip was burnt; burning of adjacent parts was practically eliminated. The tip packing can be easily replaced. The new device is lighter, more compact and more reliable in operation than the former electrode holder.

Figure 2:

Fig. 2

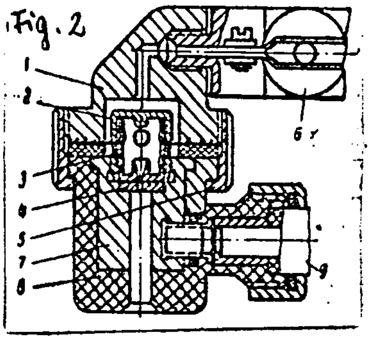

Figure 2

The EKD-4-60 electrode holder:
1 - head; 2 - spark-extinguishing chamber cap; 3 - spark-extinguishing chamber; 4 - rubber packing of electrode tip; 5 - cap nut; 6 - oxygen valve; 7 - contact bushing; 8 textolite nozzle; 9 - current connecting cable.

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S/135/61/000/002/010/012
A006/A001

Electrode Holder for Submerged Oxygen-Arc Cutting of Steel With Spark Extinguishing Chamber

Table

Type of electrode holder	Technological system of conducting the cutting process	Number of ignitions	Suitability of electrode holder after the test
EKD-4-60	Beginning: oxygen-arc Completion: arc-oxygen	1000	Suitable
	Beginning: arc-oxygen Completion: oxygen-arc	120; 300 666	The rubber packing burnt out and needed to be replaced
EKD-4	Beginning: oxygen-arc Completion: arc-oxygen	100	Suitable
	Beginning: arc-oxygen Completion: oxygen-arc	57	Not suitable (burnt)

✓

There are 2 figures and 1 table.

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S/135/61/000/004/004/012
A006/A101

AUTHOR: Madatov, N. M., Engineer

TITLE: On the Effect of Salinity of Sea Water on Underwater Welding Process with Consumable Electrode

PERIODICAL: Svarochnoye proizvodstvo, 1961, No. 4, pp. 18 - 20

TEXT: An investigation of the effect of sea water salinity on underwater welding process was conducted under laboratory conditions on the АДПГ-500 (ADPG-500) automatic machine with a textolite nozzle on the welding head and on a simple semi-automatic machine designed by A. I. Shlyamin and F. S. Lysenko. The investigation was performed in a metallic container of 0.4 - 0.5 m^3 capacity. Beads were built-up in the lower position on 200 x 90 x 10 mm "St.3" steel plates. Welding transformer PS-500 was employed as power supply source. An additional voltmeter indicated the drop of arc voltage. Gas-shielded welding process was conducted with 10ГС (10GS) 1.2 mm diameter wire. The investigations were made at $U_{\text{idle run}}$ = const and I_{welding} = constant, in water containing NaCl 0,00 - 40^{0}/oo. Salinity was changed with intervals of every 10^{0}/oo. On the basis of results obtained graphs were plotted showing the dependence of energetic and tech-

S/135/61/000/004/004/012
A006/A101

On the Effect of Salinity of Sea Water on Underwater Welding Process with Consumable Electrode

nological characteristics on the salinity of the water during automatic underwater welding in CO_2. (Fig. 1 - 4). The results show that the established welding conditions (I_{weld} = 200 amps) are maintained at increased salinity and lower power consumption; and that the ignition and maintenance of the arc requires a lesser idle-run voltage. In fresh water the time of arc ignition is 0.98 sec; in water of 30°/oo salinity it is 0.56 sec; at 41.1°/oo salinity - 0.36 sec. The welding process is stable. Peak voltage at I_{weld} = const = 200 amps are 100, 84, 67 and 50 v at 0, 10.1, 20.3 and 41.1°/oo salinity, respectively. It can be concluded that underwater welding with consumable electrode proceeds more stably in sea than in fresh water, requiring lesser power consumption and lesser idle-run voltage drop. The stability of the process is explained to a considerable degree by the presence of dissociated salts in sea water. With higher salinity of the water stability increases and power consumption decreases. This conclusion is in a certain contradiction with conventional concepts which are supported by K. K. Khernov's publication (Ref. 1). However, it is fully justified and in agreement with phenomena accompanying arc welding in water. There are 2 tables, 6 figures and 3 Soviet references.

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On the Effect of Salinity of Sea Water on Underwater Welding Process with Consumable Electrode

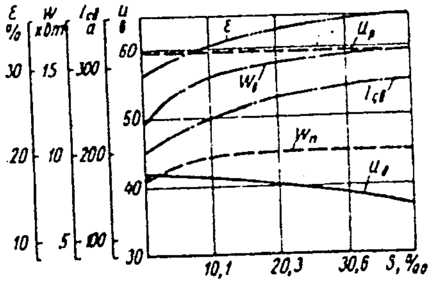

Figure 1: Changes in the parameters of the arc and the power supply source in automatic underwater welding in CO_2 depending on the salinity of the water at $U_{\text{idle run}}$ = const.

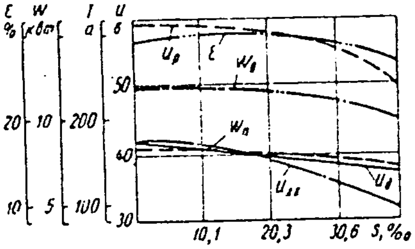

Figure 2: Changes in the parameters of the arc and the power supply source in automatic underwater welding in CO_2 depending on the salinity of the water at I_{weld} = const.

S/135/61/000/004/004/012
A006/A101

On the Effect of salinity of Sea Water on Underwater Welding Process with Consumable Electrode

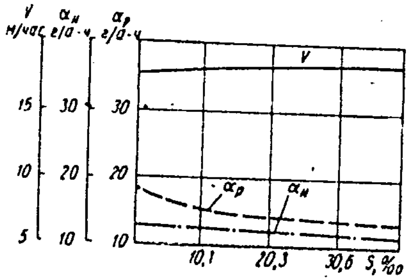

Figure 3: Changes in the technological characteristics of underwater welding in CO_2 depending on the salinity of water at $U_{idle\ run}$ = const.

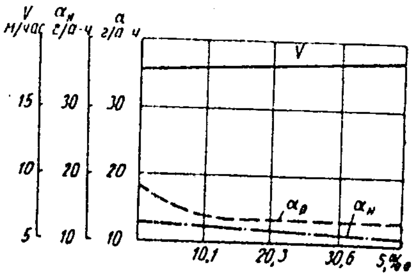

Figure 4: Changes in the technological characteristics of automatic underwater welding in CO_2 depending on the salinity of water at I_{weld} = const.

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SHLYAMIN, A.I., kand.tekhn.nauk; DUBOVA, T.N., kand.tekhn.nauk;
Prinimali uchastiye: MADATOV, N.M., inzh.; TREPOV, P.V., inzh.;
KUSHNAREV, D.M., kand.tekhn.nauk; KOGAN, Yu.A., inzh.

Semiautomatic underwater welding. Svar. proizv. no.7:25-28
Jl '61. (MIRA 14:6)
(Underwater welding and cutting)

S/135/61/000/008/002/011
A006/A101

AUTHOR: Madatov, N.M., Engineer

TITLE: On external characteristics of a power supply source for underwater welding in carbon dioxide

PERIODICAL: Svarochnoye proizvodstvo, no. 8, 1961, 4 - 8

TEXT: The author studied the characteristics of a power supply source for underwater welding in carbon dioxide, such as idle run voltage, arc voltage, maximum current intensity, inductance etc. The study was made for the purpose of determining the optimum curve shape of the external characteristics of a welding generator. Parallel tests were carried out on a ПАС-400-VI (PAS-400-VI) power supply unit and a ПС-500 (PS-500) transformer. The welding process was performed under laboratory conditions on a АДПГ-500 (ADPG-500) machine with a textolite torch nozzle, in a 0.5 m^3 tank, in lower position, at reverse polarity. "St.3" grade steel plates of 200 x 90 x 10 mm were built-up. The CO_2 consumption was constant (920 l/h) at 0.3 atm. pressure. The electrode sweep was maintained constant at 7.5 - 8 mm. Св-10ГС (Sv-10GS) wire of 1.2 mm diameter was employed. The current varied from 150 to 300 amps every 50 amps. The experiments were made

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On external characteristics ...

S/135/61/000/008/002/011
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in 5 variants of the excitation winding connection in both СГП-3 (SGP-3) and ГС-500 (GS-500) generators. The possibility of raising the idle run voltage was studied by using an ПМ-1 (PM-1) attachment, assuring the possibility of obtaining drooping, rigid and weakly rising characteristics. External characteristics of a 500-GS generator, obtained at varying connections, under optimum welding conditions are presented in graphs. The experimental investigation yielded the following results: It is expedient to use for underwater welding in CO_2 power supply sources with weakly rising external characteristics. Best results will be obtained if the slope of the external characteristic curve of the welding generator will have an angle of not over ± 0.03 v/amp on its operational section (within 150 - 250 amps). Considering the extension of weld circuits (100 m and more), it is recommended to use a generator with rigid and weakly rising characteristics. Arc voltage of 38 - 41 v and 180 - 240 amps current may be considered as optimum welding conditions for the investigated process. The power and dynamical properties of a GS-500 generator are satisfactory at varying excitation winding connections; it is suitable for underwater welding in CO_2. In spite of poorer dynamical properties and lesser stability, the PAS-400-VI welding unit may be used for the described process with a PM-1 attachment and accordant connection of the whole series winding. There are 2 tables, 8 figures and 8 Soviet-bloc references.

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S/125/61/000/011/006/012
D040/D113

AUTHOR: Madatov, N. M. (Leningrad)

TITLE: On the possibility of using high-speed photography for studying an arc burning below water

PERIODICAL: Avtomaticheskaya svarka, no. 11, 1961, 40-41

TEXT: In the light of insufficient information on the burning process of a welding arc below water, the author attempted to use a high-speed photographic method, which had successfully been used for investigating the arc in air. References are made to previous attempts by K. K. Khrenov, P. M. Iyevlev and T. I. Avilov (Ref. 1: "Svarochnoye proizvodstvo", no. 5, [illegible]; Ref. 2: "Svarochnoye proizvodstvo", no. 2, 1960) to explain this process. Experiments were conducted in a stream of water flowing along a chute. An СКС-1 (SKS-1) camera with an exposure speed of 4,000 frames/sec was used. A very simple Shlyamin-Lysenko semiautomatic welder was used for experiments with a coated electrode, and an automatic АДПГ-500 (ADPG-500) welder for welding in CO_2. It was stated that in welding with a coated electrode, the arc ignited, simultaneously with the formation of a bubble and the separation of the solid particles, producing a black opaque mass. The bubble

Card 1/2

On the possibility of ...

S/125/61/000/011/006/012
D040/D113

grew and enveloped the end of the electrode, and the arc was obviously burning inside it and not in the water. The stream of CO_2 made the water turbulent and so obstructed observations, though the black dirt nearly did not form at all, which proves that it originated from the electrode coating. It is concluded that as high-speed photography alone is insufficient for detailed observations, it should be combined with X-ray examinations. A. A. Khramchenkov and S. G. Agroskin are mentioned as having taken part in experiments. There are 2 figures and 4 Soviet references.

SUBMITTED: May 16, 1961

Card 2/2

40814

1.2300

Z/056/62/019/005/007/008
I037/I237

AUTHOR: Madatov, N. M.

TITLE: The influence of the depth of immersion of the arc on the welding process under water with a melting electrode

PERIODICAL: Přehled technické a hospodářské literatury. Hutnictví a strojírenství, v. 19, no. 5, 1962, 315, abstract HS 62-3981 (Sudostrojenije, v. 27, no. 11, 1961, 45-49)

TEXT: Change in the characteristic of the welding process with the depth of immersion of the arc and of the welded object and their investigation. The methods and the conditions at which the tests were carried out. Results and conclusion: variation of the depth is accompanied by compression and diminution of the penetration area of the electric arc, higher current density, heat concentration and increase in temperature; thus the conductivity of the arc is increased and the tension (potential) is lowered; in order to ensure welding quality independent of the depth, it is essential to limit the current parameters, where 180-240A may be considered as the optimal limit; beside the effect of the depth, the electrical tension (potential) on the arc is established by the metallurgical properties of the process; as limits one can take 27-32 V and for semiautomatic welding in the presence of CO_2, 38-42V; the effect of the variation of the cross section of the cable; the necessary welding power at constant resistance of the welding circuit is practically independent of depth. There are 3 photographs, 1 figure, 3 diagrams, 1 table, and 3 references.

[Abstracter's note: Complete translation.]

Card 1/1

MADATOV, N.M., inzh.

Certain peculiarities in the underwater burning of a welding arc.
Svar. proizv. no.3:39-41 Mr '62. (MIRA 15:2)
(Underwater welding and cutting)

39550
S/135/62/000/008/001/004
A006/A101

1.2310

AUTHOR: Madatov, N. M., Engineer

TITLE: Electrodes with iron powder in the coating for underwater welding

PERIODICAL: Svarochnoye proizvodstvo, no. 8, 1962, 14 - 16

TEXT: Engineer Z. I. Effel' and Candidate of Technical Sciences Ya. B. Dantsis participated in developing the ЭПО-55 (EPO-55) electrodes for underwater contact welding of low-carbon and low-alloy steels in both low and vertical position, and butt welding of 5 - 8 mm thick sheets without beveling of edges in a single pass. The electrode coating contains titanium dioxide, marble, ferrotitanium, ferromanganese and ferrosilicon. The granulation and purity of iron powder is of great importance. The author recommends iron powder with not less than 98.8% Fe produced by the Institute of Cermets and Special Alloys, AS UkrSSR. Underwater welding with the new electrodes is more stable and yields higher mechanical strength (38 - 52 kg/mm²; 70 - 90° bending angle) and greater penetration (4 - 5 mm) than conventional welding methods. Welding conditions are given in the table below:

Card 1/2

S/135/62/000/008/001/004
A001/A101

Electrodes with iron powder in the...

Table 5

Metal thickness in mm	Electrode diam. in mm	Arc voltage in v	Welding currents in amps			
			for welding in low position		for welding on a vertical plane	
			butt joint	tee-joint	butt joint	tee-joint
5-6	4	25-30	240-260	260-280	250-270	280-300
8-10	4	25-30	260-280	280-300	280-300	300-320
8-10	5	25-30	300-320	320-340	-	-

X

Note: 1. Welding on d-c is performed with reverse polarity; welding with direct polarity is permissible for over 8 - 10 mm metal thickness. 2. Welding of vertical seams is performed from top to bottom. There are 2 figures and 6 tables.

Card 2/2

40721

25103

S/125/62/000/009/005/008
A006/A101

AUTHOR: Madatov, N. M. (Leningrad)

TITLE: Peculiarities of underwater welding by the pressure method

PERIODICAL: Avtomaticheskaya svarka, no. 9, 1962, 63 - 66

TEXT: The author, with Candidate of Technical Sciences Ya. B. Dantsis and Engineer Z. I. Effel' cooperating, compared the underwater burning of an arc in conventional manual and pressure underwater welding. The peculiarity of the latter method is the seam formation mainly on account of the base metal, due to deep penetration. In comparison with conventional manual welding, when 80% of the weld are formed from the filler metal, in pressure welding only 30 - 40% filler metal are required to produce the seam. For the purpose of studying processes occurring in the arc, and, in particular, its stability and the nature of electrode metal transfer to the weld, a МПО-2 (MPO-2) oscillograph was used to record the curves of current and voltage changes in both the aforementioned underwater welding methods. The following advantages of the pressure method were established: It is characterized by stable electric conditions. Its stability in welding on

Card 1/2

Peculiarities of underwater...

S/125/62/000/009/005/008
A006/A101

d-c in vertical position exceeds that of the manual method by 33%, and by 22% in welding on a-c in lower position. The welding process on a-c is more stable than on d-c. Arc burning is characterized by the absence of interruptions and long-lasting short-circuits. The metal transfer in the arc is mainly fine-dropped and does not affect the parameters of the arc gap, although individual large drops and metal jet connections can cause short circuits. There are 3 figures.

SUBMITTED: November 9, 1962

Card 2/2

MADATOV, N.M., inzh.

Work standardization in underwater ship repairs. Sudostroenie 29 no.10:60-61 O '63. (MIRA 16:12)

MADATOV, N.M.

New welding equipment. Mashinostroitel' no.2:44-47 F '64.
(MIRA 17:3)

MADATOV, N.M., inzh.

Rapid docking with utilization of submarine repair stations. Sudostroenie 30 no.11:57 N '64. (MIRA 18:3)

L 1303-66 EWT(d)/EWT(l)/EWT(m)/EWP(c)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)/EWP(l)/ EED(b)-3/EWA(c)/ ETC(m) IJP(c) JD/WW/JM

ACCESSION NR: AP5022352 UR/0135/65/000/009/0037/0037 61
621.791.75.01:621.386.8 58
B

AUTHOR: Madatov, N. M. 44,55 (Engineer); Pokhodnya, I. K. (Candidate of technical sciences); Kostenko, B. A. 44,55 (Engineer) 44,57

TITLE: High-speed cineradiography of the welding arc underwater 14 44,57

SOURCE: Svarochnoye proizvodstvo, no. 9, 1965, 37

TOPIC TAGS: X ray photography, arc welding, welding electrode, underwater welding 20, 44,55

ABSTRACT: A setup for high-speed cineradiography of the underwater welding arc is described for the case of bead forming on the rib of a steel plate placed in an aluminum water tank equipped with inlet and outlet cocks for the replacement of water and with illuminating lamps. This beading was performed with the aid of unit electrodes as well as of thin-wire electrodes. Radiography of the beading was carried out with the aid of a TUR-1000 apparatus under the following conditions: anode current, 160 ma; anode voltage, 115 kv; photographing time, 1.5 sec; photographing rate, 750-1000 frames/sec; distance from tube to electrode,

Card 1/3

L 1303-66

ACCESSION NR: AP5022352

300 mm. Despite the presence of a strongly scattering medium -- water -- images with adequate contrast were obtained with respect to the terminal, electrode, drop, plate (specimen), and the steam-gas bubble. This high-speed cineradiography of the underwater arc has made it possible to establish a number of parameters of the underwater welding process. In particular, it was found that the steam-gas bubble around the arc under water is relatively immobile and its oscillations obey a cyclic law. The bubble grows from the minimum up to a critical maximum beyond which it is destroyed and almost completely floats to the surface. Contrary to the traditional concept, it was found that tiny gas bubbles do not separate from this bubble. The transfer of metal in the arc during underwater welding proved to differ sharply depending on whether unit electrodes or thin-wire electrodes were used: in the first case the transfer of metal occurred continuously, as a rule, whereas in the second case (thin-wire electrode) transfer occurred in the form of large drops with a diameter 2-3 times as large as the electrode diameter. In short, cineradiography of the underwater welding arc is a highly promising technique which should be further improved and refined. Orig. art. has: 3 figures.

Card 2/3

L 1303-66

3

ACCESSION NR: AP5022352

ASSOCIATION: IES im. Ye.O. Patona 44,55

SUB CODE: IE, OP

ENCL: 00

SUBMITTED: 00

OTHER: 000

NO REF SOV: 001

mlr

Card 3/3

L 27230-66 EWP(k)/EWT(d)/EWT(m)/EWP(h)/T/EWP(l)/EWP(v)/EWP(t) JD/HM

ACC NR: AM6003012 Monograph UR/

28
26
B+1

Madatov, Norayr Madatovich

14 14

Underwater repair of ships and vessels (Podvodnyy remont korabley i sudov) Moscow, Voyenizdat M-va obot. SSSR, 1965. 279 p. illus., biblio., tables. Errata slip inserted. 4500 ccpies printed.

TOPIC TAGS: marine engineering, shipbuilding engineering, ship repair, ship repair tool, ship component, underwater ship repair, underwater welding, underwater metal cutting

PURPOSE AND COVERAGE: This textbook-handbook is intended for engineers, technicians, divers, skilled workers, shop foremen, ship's staff, instructors, and students in ship repair and marine schools. In the book, a detailed description is given of the technical procedures and operations involved in underwater ship repair, including underwater semiautomatic welding 14 and metal cutting, painting, and other procedures developed in recent years. The influence of underwater ship-repair methods on the expansion of the production capabilities of ship repair facilities in repairing underwater hull areas and other equipment is reviewed along with underwater repair operation sequences. Problems relating to inspection and safety are also examined. The book is well illustrated and contains cutaway drawings of a number of underwater hand tools. A great deal of reference material is contained in the appendices. The author thanks engineers G. T. Karnaukhov and A. F. Udovenko for their valuable suggestions and remarks, and engineers S. G. Agroskin, M. M.

Card 1/3 UDC: 629.12.004.67 (204.1)

2

L 27230-66

ACC NR: AM6003012

2

Aleksandrov, and N. A. Stoptsov for their assistance in the selection of material.

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SUB CODE: 13, 14/ SUBM DATE: 20Feb65/ ORIG DATE: 022/

Card 3/3

L 29687-66 EWP(k)/EWT(m)/T/EWP(v)/EWP(t)/ETI JD/HM

ACC NR: AP6008812 (N) SOURCE CODE: UR/0135/66/000/003/0011/0014

AUTHOR: Madatov, N. M. (Engineer)

57
B

ORG: none

TITLE: Energy characteristics of a welding arc under water

14

SOURCE: Svarochnoye proizvodstvo, no. 3, 1966, 11-14

TOPIC TAGS: arc welding, arc property/EPS-52 electrode wire, Sv-08G2S electrode welding technology, x ray photography,

ABSTRACT: The characteristics of a welding arc under water were experimentally investigated on G. I. Leskov's apparatus using high-speed x-ray photography and synchronous recording of the welding process parameters. The work was performed at the Electric Welding Institute im. Ye. O. Paton (Institut elektrosvarki). The diameter of the arc was measured and was found to be given empirically by $d = A\sqrt{I}$ (where A = 0.11, I = current) (for 4-mm diameter EPS-52 and 1.2-mm diameter Sv-08G2S electrodes). The current distribution in the arc was measured (table), expressions were derived for the energy required to melt and vaporize iron electrodes, and these were confirmed by experimental results. Using the arc geometries shown in Fig. 1, an equation for the temperature in the arc is derived and comparative curves of the theoretical and experimental temperatures show excellent agreement. By using the arc temperature, the effective ionization potential of the arc gas can be estimated.

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L 29687-66

ACC NR: AP6008812

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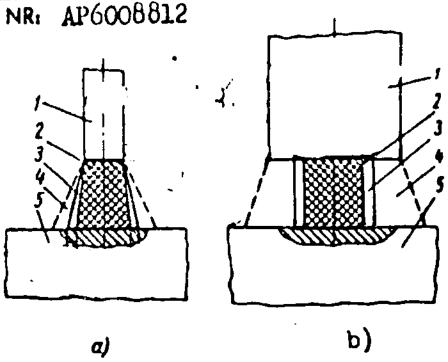


Fig. 1. Arc geometry during welding: a - thin wire; b - rod electrode: 1 - electrode; 2 - effective arc zone; 3 - electrically conducting region; 4 - corona; 5 - work piece.

Orig. art. has: 6 tables, 5 figures, and 13 formulas.

SUB CODE: 13,14/ SUBM DATE: none/ ORIG REF: 007/ OTH REF: 002

Card 2/2 CC

L 29842-66 EWT(m)/EWP(v)/T/EWP(t)/ETI/EWP(k) JD/HM

ACC NR: AP6015039 (N) SOURCE CODE: UR/0125/66/000/004/0037/0040

AUTHOR: Madatov, N. M.

ORG: Institute of Electric Welding im. Ye. O. Paton, AN UkrSSR (Institut elektrosvarki AN UkrSSR)

TITLE: Form of the curve of the static volt-ampere characteristic of an arc under water

SOURCE: Avtomaticheskaya svarka, no. 4, 1966, 37-40

TOPIC TAGS: arc welding, welding electrode, volt ampere characteristic, x ray photography/ KB welding electrode, EPS-52 welding electrode/ 4

ABSTRACT: Methods of studying the properties of a welding arc under water are examined, and accurate volt-ampere characteristics of an arc for welding under water are given. Study of an arc under water with kraft paper and high-speed photography and oscillography is found to be simple, but it does not permit the geometry of the arc to be refined. The experiments by G. I. Leskov (Raspredeleniye potentsiala v dugakh otkrytykh i pod flyusom, Avtomaticheskaya svarka, No. 1, 1954) and by the author showed that the length of the arc gap remains constant at first (see Fig. 1). The static volt-ampere characteristic of an arc under water has a concave form (see Fig. 2), so a composite method must be used to study the properties of arcs under

Card 1/2 UDC: 621.791.75.057.2

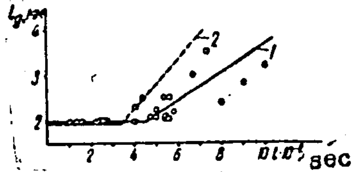
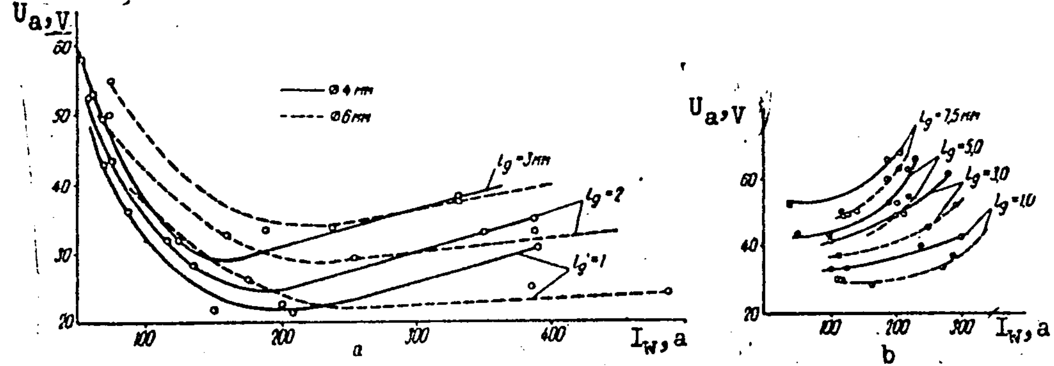


Fig. 1. Change in length of arc gap as a function of time in welding under water (fresh water, I_W = 300--500 A, U_{xx} = 73 V, l_d = 2 mm): 1 - EPS-52 electrodes 4 mm in diameter; 2 - KB electrodes 4 mm in diameter.



a

b

Fig. 2. Volt-ampere characteristics of arc in welding under water: a - KB electrodes 4 mm in diameter (continuous line) and 6 mm in diameter (dotted line); direct polarity, fresh water. b - Sv-08G2S bare wire 1.2 mm in diameter, direct polarity (continuous line) and reverse polarity (dotted line), fresh water.

water. Orig. art. has: 6 figures.

SUB CODE: 09, 13/ SUBM DATE: 09Mar65/ ORIG REF: 008/ OTH REF: 001

Card 2/2

ACC NR: AP6014437 (N) SOURCE CODE: UR/0125/65/000/012/0025/0029

AUTHOR: Madatov, N. M.

ORG: Institute for Electro-Welding imeni Ye. O. Paton, AN UkrSSR (Institut elektrosvarki AN UkrSSR)

TITLE: The properties of the steam-vapor bubble around the arc during underwater welding

SOURCE: Avtomaticheskaya svarka, no. 12, 1965, 25-29

TOPIC TAGS: welding, welding technology, electrode, welding rod, arc welding / EPS-52 electrode, Sv08G2S welding rod

ABSTRACT: The properties of the steam-vapor bubble that forms around the arc during underwater welding was studied in fresh- and salt water. The experiments were carried out without the use of protecting gases. EPS-52 electrodes of 5-mm diameter or 1.2--mm thin Sv08G2S welding rods were used in the welding experiments. The rate of bubble growth was recorded with the aid of an x-ray motion picture camera as described by I. K. Pokhodnya (Metod issledovaniya protsessa plavleniya i perenosa elektrodnogo metalla pri svarke, Avtomaticheskaya svarka, No. 2, 1964). The experimental results are presented graphically (see Fig. 1). The critical bubble

Card 1/3

UDC: 621.791.75.057.2

ACC NR: AP6014437

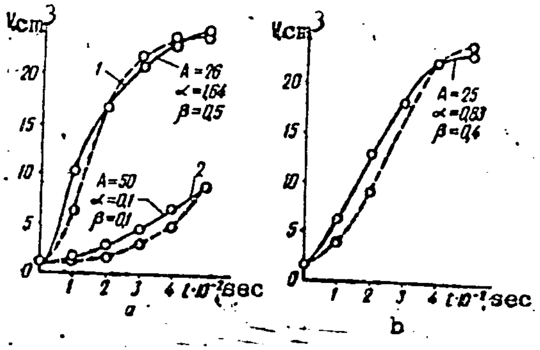


Fig. 1. Change in bubble volume during welding with thin wire (a) and electrodes (b). 1 - in salt water, S = 41.1%; 2 - in fresh water. Solid curve calculated data; dashed curve - experimental data. /Abstracter's note: The symbol S = 41.1°/oo is not defined in the paper./

radius was found to obey the expression

$$r_{kr} \approx \sqrt[3]{\frac{3}{K_f} \cdot \frac{\sigma}{v^2 \sqrt{\rho' \rho^3}}},$$

proposed by V. G. Levich (Fiziko-khimicheskaya gidrodinamika, Fizmatgiz, M., 1959). Here r_{kr} is the critical bubble radius, $K_f = \frac{8\nu}{r_{max}}$ the resistance coefficient; σ - surface tension, v - velocity of the steam-vapor mixture, ρ' - density of steam-vapor mixture inside the bubble, and ρ - density of water. The empirical relationship established for the rate of bubble growth was

$$V_{(t)} = V_0 + A(1 - e^{-\alpha t})(1 - e^{-\beta t}),$$

Card 2/3

0

where V_t and V_o are the volumes of the bubble at time t and t = 0 respectively, and A, α, and β are constants. Orig. art. has: 1 table, 5 graphs, and 8 equations.

SUB CODE: 11/ 13/ SUBM DATE: 14Feb65/ ORIG REF: 008/ OTH REF: 001

kh

MADATOV, R. I.

MADATOV, R. I.

Alma-Ata

Zaveduyushchiy oblastnoy veterinarnoy
laboratoriey g. Alma-Ata

Pchelovodstvo, 1952, no. 8, avgust

MADATOV, R. I.

Bees - Diseases

Treating European foul brood with "disulfan." Pchelovodstvo 29 no. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1952. Uncl.

MADATOV, R. I.

MADATOV, R. I. -- "The Distribution of Nosematosis of Bees and the Study of Sanitary-Prophylactic Measures to Combat It under Conditions of the Kazakh SSR." Min Higher Education USSR. Alma-Ata, 1955. (Dissertation for the Degree of Candidate in Veterinary Sciences).

So.: Knizhnaya Litopis', No. 7, 1956.

MADATOVA, E.G.

SOV/137-58-8-17587

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 197 (USSR)

AUTHORS: Gertsriken, S.D., Dekhtyar, I.Ya., Kumok, L.M., Madatova, E.G.

TITLE: Determination of the Diffusion Parameters in a Mixture of Two Phases (Opredeleniye parametrov diffuzii v smesi dvukh faz)

PERIODICAL: Sb. nauchn. rabot In-ta metallofiz. AN UkrSSR, 1957, Nr 8, pp 105-108

ABSTRACT: The relationship between the effective coefficients of diffusion in an alloy D_{ef} and the coefficients in each separate phase D_α and D_β is examined, also the relationship between the analogous effective energies of the activation of diffusion E_{ef}, E_α, and E_β. The calculation is conducted on the basis of a method in which the utilization of radioactive isotopes affords a determination of D from the diffusion currents. As a result the following formulae are obtained $D_{ef} = D_\alpha^{C_\alpha} D_\beta^{C_\beta}$ and $E_{ef} = c_\alpha E_\alpha + c_\beta E_\beta$, where c_α and c_β are the concentrations of the phases in the alloy. The formulae obtained are verified on the example of known data on self-diffusion of Zn (RZhKhim,

Card 1/2

SOV/137-58-8-17587

Determination of the Diffusion Parameters in a Mixture of Two Phases

Nr 1, abstract 188) parallel and perpendicularly to the c axis by the application to the case of diffusion in polycrystalline Zn, in which the presence of fine crystals of the different phases "phase [illegible] and phase [illegible]" is assumed. A good concurrence with experimental data is [illegible]

I. D.

1. Alloys--Diffusion 2. Alloys--Phase studies
3. Mathematics

Card 2/2

SOV/137-59-4-8372

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 4, p 148 (USSR)

AUTHORS: Gertsriken, S.D., Dekhtyar, I.Ya., Kumok, L.M., Madatova, E.G.

TITLE: Investigation Into Cobalt Diffusion 18 in Multi-Component Alloys of the Ferrite and Ferrite-Austenite Type 1

PERIODICAL: V sb.: Metallurgiya i metallovedeniye, Moscow, AS USSR, 1958, pp 253-258

ABSTRACT: The authors investigated diffusion of Co^{60} in alloys containing in %: Cr 15-18, Ni 17-18, Mo 0-2, Al 5-8, Fe 54-61, Nb 0-1, Zr 0-1, B 0-2. Alloys with a two-phase structure of the ferrite austenite type, were annealed at 900 - 1,200°C; single-phase ferrite type alloys were annealed within the 800 - 1,000°C temperature range with intervals of 50°. Diffusion coefficient D was determined by the absorption method. From lgD - 1/T graphs, described by a straight line, values of the activation energy E and of the pre-exponential multiplier D_0 were calculated for all the alloys. The authors analyzed the relation between the effective diffusion coefficient D_{ef} in the alloy and diffusion coefficients $D\alpha$ and $D\beta$ of each individual phase; they also investigated the relation of the effective energy of diffusion activation E_{ef} and the energies of diffusion activation

Card 1/2

SOV/137-59-4-8372

Investigation Into Cobalt Diffusion in Multi-Component Alloys of the Ferrite and Ferrite-Austenite Type

in each phase E_α and E_β. Theoretical and experimental data were in a satisfactory agreement. It is shown that inspite of the difference in the parameters of diffusion in individual phases, D_{ef} in a two-phase mixture obeys, under certain conditions, the conventional formula $D = D_0 \exp(-E/RT)$. The diffusion rats in ferrite alloys is considerably higher than in a two-phase mixture.

I.L.

✓

Card 2/2

DEKHTYAR, I.Ya.; MADATOVA, E.G.

Changes of coercive force during cyclic heat treatment. Sbor. nauch.rab.Inst.metallofiz.AN URSR no.12:72-87 '61. (MIRA 14:8)
(Metals—Heat treatment) (Ferromagnetism)

SOV/126-6-5-32/43

AUTHORS: Dekhtyar, I.Ya., and Madatova, E.G.

TITLE: The Mechanism of Deformation of Polycrystalline Metals on Repeated Quenching (O mekhanizme deformatsii polikristallicheskikh metallov pri mnogokratnoy zakalke)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 5, pp 939 - 940 (USSR)

ABSTRACT: Deformation of metals on repeated quenching consist of the fact that if a metallic specimen is quenched several times from a high temperature or is subjected to repeated heating and cooling cycles to a temperature above and below that of polymorphic transformation, respectively, it deforms, elongating in one direction and contracting in the other. With the aim of studying the mechanism of this phenomenon the authors have investigated the influence of repeated quenching from various temperatures on the elongation of thin wire specimens of silver, gold, platinum and a platinum plus 10% rhodium alloy. A preliminary investigation carried out on silver has shown that the elongation of a thin specimen at a constant quenching temperature in the first approximation is proportional to the number of thermal cycles. In Figure 1 graphs of the

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SOV/126-6-5-32/43

The Mechanism of Deformation of Polycrystalline Metals on Repeated Quenching

temperature dependence of deformation for the investigated specimens are shown. Along the abscissa axes are marked the values of $1/T_3$, where T_3 is the quenching temperature and along the ordinates axes $\Delta L/L_0$, where L_0 is the original length of the specimen. All changes due to deformation refer to a constant number of thermal cycles. The curves satisfy the relationship:

$$\varepsilon = \frac{\Delta L}{L_0} = A \exp\left(-\frac{U}{kT_3}\right) \qquad (1)$$

where A and U are constants depending on the material. Assuming that the microscopic deformation is due to excess concentration of vacancies:

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SOV/126-6-5-32/43

The Mechanism of Deformation of Polycrystalline Metals on Repeated Quenching

$$\left[\Delta n_b \cong n_b = N \exp\left(-\frac{U_b}{kT_3}\right) \right],$$

which arises after each quench, as well as to the nature of their movement as the result of interaction with dislocations, we obtain:

$$\frac{\Delta L}{L_0} = A' \sqrt{N} \exp\left(-\frac{U_b}{kT_3}\right) \qquad (2)$$

where N is the number of atoms per cm^3 , U_b is the energy of vacancy formation.

Data given in the table show that the numerical values of U , determined in accordance with Formula (1) by experiment, are close to U_b - the energy of vacancy formation. In order to explain the directional deformation of wires, the

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SOV/126-6-5-32/43

The Mechanism of Deformation of Polycrystalline Metals on Repeated Quenching

dislocation mechanism of deformation can be taken as the basis. It is assumed that vacancies are most easily formed in dislocations (Ref 1). The latter are not only sources but also reservoirs for vacancies. Stresses arise on quenching which are greater in the case of thin wires in a radial direction than along the axes of the specimen. These stresses are associated with the emergence of new dislocations, i.e. supplementary reservoirs for vacancies. The stresses can be removed by annihilation of the vacancies with dislocations, which takes place during second heating following quenching. In the case of wires having a diameter approximately equal to the size of the grain, the excess vacancies can come to the surface of the crystal as a result of removal of stresses but this must be compensated by the movement of atoms in the opposite direction, as a result of which the specimen elongates along the axis and contracts in the cross-sectional direction. If the number of dislocation protrusions per unit length of dislocation, which are reservoirs for excess vacancies, is denoted by n_j, then the elementary deformation thus brought about can be

The Mechanism of Deformation of Polycrystalline Metals on Repeated Quenching

expressed as follows (Ref 2):

$$e = \frac{b^2}{n_j} \triangle n \qquad (3)$$

where b is the Burger vector. From the above equation we obtain:

$$\frac{\triangle L}{L_o} = \frac{\nu b^2 N}{n_j} \exp\left(- \frac{U_0}{kT_{\text{з}}} \right) \qquad (4) .$$

From Eqs (1) and (4) we obtain:

$$A \cong \frac{\nu b^2 N}{n_j} \qquad (5) .$$

SOV/126-6-5-32/43

The Mechanism of Deformation of Polycrystalline Metals on Repeated Quenching

According to Maclin (Ref 3) the mean number of dislocation protrusions per unit length of dislocation which bring about deformation is:

$$n_j = f l N_\alpha \qquad (6)$$

where f is a coefficient, less than unity, defining the effective number of protrusions which are reservoirs for vacancies, l is the length of the free run of dislocations and N_α is their density. From Formulae (5) and (6) an estimate of the density of dislocations can be made:

$$N_\alpha \cong \frac{\nu b^2 N}{f l A},$$

if the course of the free run is assumed to be half the distance between the source of dislocation and the barrier. If d is the distance between the active slip planes, then the mean distance between dislocations will be

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SOV/126-6-5-32/43

The Mechanism of Deformation of Polycrystalline Metals on Repeated Quenching

$(\ell d)^{1/2}$. This distance is of the order of $\sim 10^{-4}$ cm and $\ell d = 10^{-8} \text{cm}^2$. The distance between the active slip planes, according to electron microscope data, is of the order of 100 to 1 000 Å. Hence, $\ell \simeq 10^{-3}$ cm and the density of dislocations as estimated from these data is of the order of 10^{11} cm^{-2} (see table), which satisfactorily coincides with estimates made by other methods.
This is a complete translation, except for the table.
There are 2 figures, 1 table and 4 references, 1 of which is Soviet and 3 English.

ASSOCIATION: Institut metallofiziki AN USSR (Institute of Metal Physics of the Ac.Sc. Ukrainian SSR)
SUBMITTED: June 26, 1956

Card 7/7

MADATOVA, E.G.

18(7) PHASE I BOOK EXPLOITATION SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Ageyev; Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. M. Pavlov, and I. F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties of specific materials. Various phenomena occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

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MADATOVA, E.G.

18(4,7); 25(1) PHASE I BOOK EXPLOITATION SOV/2306

Akademiya nauk Ukrainskoy SSR. Institut metallofiziki

Voprosy fiziki metallov i metallovedeniya (Problems in the Physics of Metals and Metallography) Kiyev, Izd-vo AN Ukrainskiy SSR, 1959. (Series: Its: Sbornik nauchnykh rabot, Nr 9) Errata slip inserted. 3,000 copies printed.

Ed. of Publishing House: V.L. Shkurko; Tech. Ed.: M.I. Yefimova; Editorial Board: V.N. Svechnikov, Academician, Academy of Sciences, Ukrainian SSR (Resp. Ed.); S.D. Gertsriken, Doctor of Physical and Mathematical Sciences; and I.Ya. Dekhtyar, Doctor of Technical Sciences.

PURPOSE: This collection of articles is intended for scientific workers, aspirants, and engineers in the fields of the physics of metals, metallography, and metallurgy. It may also be useful to students of advanced courses in metallurgical and physical faculties.

COVERAGE: This collection of articles deals with the following topics: effect of high-speed heating, heat treatment, deformations, and crystallization conditions on phase transformations, structures, and properties of metals and alloys; the effect of additional alloying components on volumetric and intercrystalline diffusion in alloys; and the effect of repeated quench hardening and radioactive and ultrasonic treatment on the physical properties of alloys. No personalities are mentioned. References follow several of the articles.

Dekhtyar, I.Ya., and E.G. Madatova. Effect of Quenching on Some Physical Properties of Metals and Alloys 162

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DEKHTYAR, I.Ya.; MIKHALENKOV, V.S.; MADATOVA, E.G.

Effect of crystal structure defects on certain properties of metals and alloys. Issl.po zharopr.splav. 4:71-77 '59.
(MIRA 13:5)

(Crystals--Defects) (Dislocations in metals)

DEKHTYAR, I.Ya.; MADATOVA, E.G.

Effect of repeated hardening on certain physical properties of metals and alloys. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.9:162-172 '59. (MIRA 12:9)
(Metals--Hardening) (Metallography)

MADATOVA, E.G.

PHASE I BOOK EXPLOITATION SOV/4502

Akademiya nauk SSSR. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, tom 6 (Investigations of Heat-Resistant Alloys, Vol. 6) Moscow, 1960. 319 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova. Nauchnyy sovet po probleme zharoprochnykh splavov.

Editorial Board: I. P. Bardin (Deceased) Academician, G. V. Kurdyumov, N. V. Ageyev, Corresponding Member, Academy of Sciences USSR (Resp. Ed.), I. A. Oding, I. M. Pavlov, and I. F. Zudin, Candidate of Technical Sciences; Ed. of Publishing House: V. A. Klimov; Tech. Ed.: S. G. Tikhomirova.

PURPOSE: This book is intended for research workers in the field of physics of metals and for metallurgists, particularly those working on heat-resistant alloys.

COVERAGE: This collection of 45 articles deals with various problems in the production of heat-resistant alloys. Special attention is paid to the mechanisms of deformation of such metals as aluminum, copper, iron, and nickel. Various defects and failures of metals are analyzed, and means for increasing the heat resistance and plasticity are described. Among the special problems discussed are: electrolytic conductivity of iron-aluminum alloys in the solid state; the mobility of atoms in nickel-iron alloys, depending upon defects of their crystalline structure; the kinetics of change in isolated pores; the irreversible thermal transformation of solid bodies, etc. No personalities are mentioned. References follow each article.

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1500 1413, 1418.

S/185/60/005/001/008/018
A151/A029

AUTHORS: Gertsriken, S.D.; Dekhtyar, I.Ya.; Mikhalenkov, V.S.; Madatova, Ye.G.

TITLE: The Study of the State of Atoms in Solid Iron - Aluminum Solutions by the Electrical Transfer Method

PERIODICAL: Ukrayins'kyy Fizychnyy Zhurnal, 1960, Vol. 5, No. 1, pp. 79 - 87

TEXT: The paper investigates the state of atoms in solid iron - aluminum solutions by applying a method based on the effect of displacement of inert marks in a direct current field. Samples of a homogeneous solid solution of Fe and Al were used which had the form of lengthened small semicylinders with a diameter of 5mm² and a length of 40 mm. Apertures with a diameter of 0.5 mm were drilled perpendicularly to the axis of such a sample, through which molybdenum wires were pulled. The sample was tightly clamped between two nickel electrodes, placed in a wide quartz tube of a vacuum installation. The electrolytic current served simultaneously as a source for heating the samples. In a number of cases, when direct current could not ensure the pre-set temperature, additional heatings by alternating current were applied. As proved by former experiments, a displacement of

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S/185/60/005/001/008/018
A151/A029

The Study of the State of Atoms in Solid Iron - Aluminum Solutions by the Electrical Transfer Method

marks in the direction to the anode took place after a certain annealing. The location of the marks in relation to the edges of the sample and to the lines [illegible] near its cold ends was measured on a comparator with an accuracy of ± 0 [illegible] mm. The observation of the displacement gave a clear evidence for the presence of the Kirkendall effect within the direct current circuit. Alternating current passage through did not lead to any displacements of the marks. It was discovered that in all cases investigated the displacement of the marks proceeds in the direction to the anode. Bearing in mind that in the investigated alloys with little aluminum content the majority of places in the lattice was occupied by iron atoms, it can be assumed that the dosplacement of marks is conditioned chiefly by the motion of iron ions. Formula (6) shows that this displacement should be proportional to the duration of annealing t. The displacement of marks proceeding in the direction of the anode led to the conclusion that under such conditions of the experiment the ions of iron are positively charged. On the basis of Formula (12), the numbers U of the transfers of ions of iron at 1,300°C were calculated. They proved to be $4.6 \cdot 10^{-6}$ and $3.45 \cdot 10^{-6}$ g-ion/farad for alloys contaning 2.5 and 8 weight % of Al, respectively. The results obtained make it possible to calculate the charges of iron ions with an accuracy of up to the multiplier constant. The calculation
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86809

S/185/60/005/001/008/018
A151/A029

Study of the State of Atoms in Solid Iron - Aluminum Solutions by the Electri- [illegible] Transfer Method.

[illegible] out in this paper has shown that the positive charge of iron ions in an alloy with a 2.5% aluminum content is aproximately twice as high compared to their charge in an alloy with 8% of aluminum. In order to determine the real value of the ion charge, as well as the symbol and the value of the charge of the second alloy component, it seems necessary to make the calculation conducted more precise. There are 4 figures and 11 references: 7 Soviet, 2 English, 1 German and 1 unindentified.

X

ASSOCIATION: Instytut metalofizyky AN URSR (Institute of the Physics of Metals, AS UkrSSR).

SUBMITTED: June 29, 1959

Card 3/3

S/081/61/000/019/003/085
B101/B110

AUTHORS: Gertsriken, S. D., Dekhtyar, I. Ya., Mikhalenkov, V. S., Madatova, E. G.

TITLE: Study of the electrolytic conductivity of solid iron - aluminum alloys

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 19, 1961, 31, abstract 19B227 (Sb. "Issled. po zharoprochn. splavam", M., AN SSSR, v. 6, 1960, 99 - 104)

TEXT: The electric migration in Fe - Al alloys (2.5 % by weight of Al) at 1300°C was studied by the method of displacing an inert marker. In all cases, the markers moved toward the anode in electric migration. Since the displacement is due to the Kirkendall effect, Fe ions migrate to the cathode and are positively charged. It was shown that the ionic charge can be determined from the activation energy of diffusion and from that of motion of the markers. [Abstracter's note: Complete translation.]

Card 1/1

GERTSRIKEN, S.D.; DEKHTYAR, I.Ya.; KUMOK, L.M.: MADATOVA, E.G.

Studying defects in the crystal structure of chromium. Issl. po zharopr. splav. 6:251-258 '60. (MIRA 13:9)
(Chromium--Defects) (Dislocations in metals)

89697

S/139/61/000/001/005/018
E030/E435

9.4300 (1043,1137,1155)

AUTHORS: Dekhtyar, I.Ya. and Madatova, E.G.

TITLE: Interaction Between Magnetic Domain Structure and Dislocations in Ferromagnetics

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1961, No.1, pp.63-70

TEXT: Calculations have been performed on the effect of edge and spherical dislocations on the coercive force of ferromagnetics and experiments on the change in coercive force of pure nickel after successive rapid quenchings from 1040°C have given excellent agreement with the theory for edge dislocations but poor agreement for spherical dislocations. For edge dislocations, the coercive force H_c is related to the number of times t of quenching by the formula

$$H_c = \frac{A}{2} \operatorname{th}^2 bt + A \operatorname{th}^2 \sqrt{2bt} \qquad (16)$$

where b is a parameter directly proportional to the square root of the number of stationary dislocations and where A is a function of crystallite dimensions, saturation magnetization,

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E030/E435

Interaction Between Magnetic ...

diameter of vacancy and number of domains. In practice, A and b would be determined empirically and in Fig.1, for nickel, values of 3.66 oersted for A and 0.15 times^{-1} for b, give excellent agreement with the coercive force variation over 30 repeated quenchings from above the Curie point. (The specimen was a pure nickel rod, 0.5 mm diameter and 70 mm long; it was subjected to prolonged heating, then quenching at 100°C, when its coercive force was measured to an accuracy of ± 0.02 oersted.) Calculation of the coercive force arising from the formation of inclusions of spherical symmetry around vacancies produced by heating was not completed, since it was demonstrated that the radius of such defects must go through a pronounced minimum on repeated heating and that the coercive force would then also show a minimum. This is clearly not confirmed by experiment. There are 1 figure and 4 references: 1 Soviet and 3 non-Soviet.

ASSOCIATION: Kiyevskiy politekhnicheskiy institut
(Kiyev Polytechnical Institute)

SUBMITTED: February 9, 1960

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S/139/61/000/001/005/018
E030/E435

Interaction Between Magnetic ...

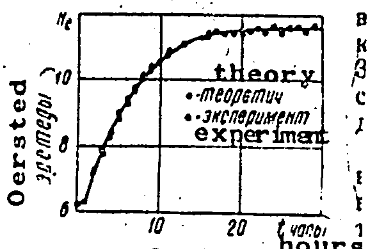

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Fig.

S/126/61/011/004/001/023
E073/E335

AUTHORS: Dekhtyar, I.Ya. and Madatova, E.G.

TITLE: Change of the Magnetostriction Saturation During Annealing of a Hardened Ferromagnetic

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.4, pp.507-512

TEXT: In an earlier paper (Ref.1) the authors have shown that the change in the coercive force under conditions of low-temperature annealing of a ferromagnetic which has been hardened from a high temperature is due to the fact that the dislocation loops arising during hardening increase with increasing annealing time. This leads to an increase in the dimensions of the dislocation loops which, in turn, brings about an increase in the coercive force. The maximum possible increase in H_c during annealing is determined by the time required for the confluence of all point defects to the dislocation loops to take place. From this time onwards H_c remains almost unchanged. The authors investigated the change in the saturation magnetostriction during low-temperature tempering

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Change of the Magnetostriction ... S/126/61/011/004/001/023
E073/E335

of ferromagnetics originally hardened from a high temperature. The case is considered where the hardening temperature is higher than the Curie point and sufficiently high to produce dislocation loops. According to earlier work (Ref.1), for nickel as a ferromagnetic, the required conditions are satisfied by hardening from temperatures above 900°C. In this paper a new method of measuring the saturation magnetostriction is described, which is based on studying the kinetics of the change in the magnetostriction of low-temperature annealed nickel, previously hardened from 900, 1000 and 1100°C. The use of this method for investigating changes in the saturation magnetostriction is also described. The method is based on applying the quadrature dependence of the sag of a suspended wire λ on its length (Fig.1):

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